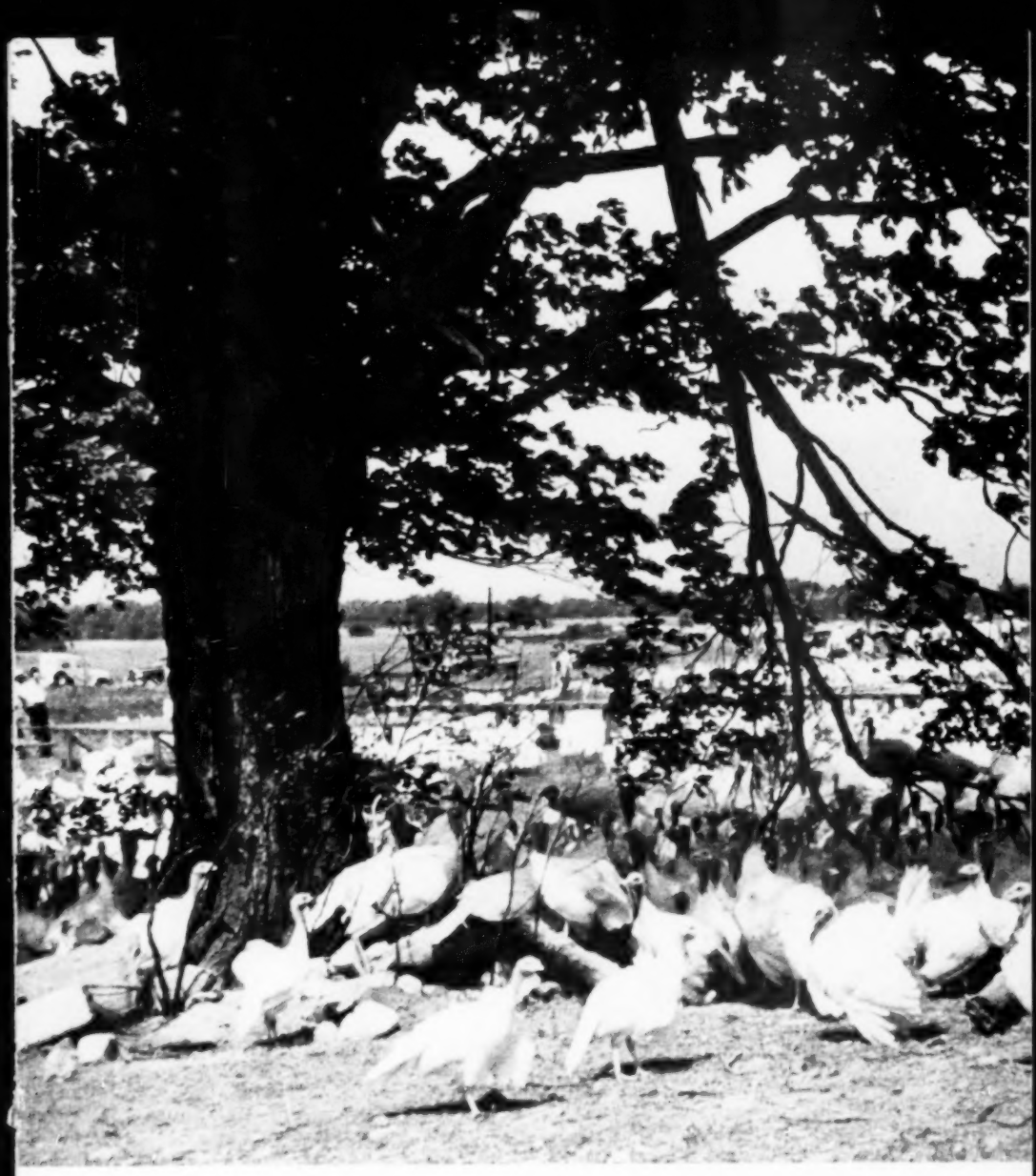

GROWING TURKEYS

for Market

E. Y. SMITH

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Growing Turkeys for Market

By E. Y. Smith

Turkeys are not hard to raise, and they do not sicken and die without cause. With strong and disease-free poults and with good feed and management practices, it is reasonable to expect that from 85 to 90 per cent of all the poults started may be raised to market age.

Although turkeys are still "the holiday bird," and will continue to be, their use has ceased to be limited to that trade alone. They now are one of the regular year-round sources of food. They utilize feed efficiently and make economical gains. From 4 to 5 pounds of feed (⅓ grain and ⅔ mash) produces a pound of gain (live weight) to about six months of age under the complete-confinement method of rearing (page 7). Less than 4 pounds of feed may be needed for a pound of gain (live weight) when the birds have good green pasture from the eighth or tenth week to the twenty-sixth week. The large amount of edible meat per pound of live weight makes the turkey a relatively economical bird to buy.

Before deciding to start a turkey enterprise, the advantages and disadvantages of the location as compared with those in other sections of the country should be carefully considered.

New York as a Turkey Growing State

World War II accelerated the increase in production in New York State, but it did not cause it. The increase started prior to the war and has continued largely because of a knowledge of the cause and the prevention of the more serious diseases. The adoption of better feed and management practices has removed many of the risks of turkey growing, and it is now one of the best paying agricultural enterprises of the State. Further increases are desirable and almost sure to come. But greater efficiency is necessary for success since the New York turkey grower must compete on a price-quality basis with turkey growers from other sections of the country.

The cost of labor and equipment usually is higher in the East than in some other sections of the country. Feed costs also are higher, but this disadvantage may have been over-emphasized as costs of commercial mashes vary little in different sections of the country and mashes comprise about two-thirds of the growing ration. Then too, in recent years New York turkey growers have made greater use of pastures and other green feeds.

This State is particularly well adapted to pasture production because of its relatively regular distribution of rainfall. Drouth periods are not only less frequent but less severe than in some sections.

New York turkey growers are ideally situated near markets. This is a deficit-producing area; that is, there are not enough birds to supply the demand. Great quantities of turkeys are used throughout the entire year, and the demand is being further expanded as the hotels, restaurants, railroads, and steamship lines become better informed as to the economy of turkeys as compared with other meats. Furthermore, these nearby markets are relatively high-priced quality markets and nearness to such markets not only means a saving in the cost of transporting the product from farm to market, but it offers opportunities for the producer to keep informed as to market demands.

One important limitation of the turkey industry in this State at present is the lack of an adequate supply of high-quality poults. From the standpoint of meat type, there is still room for improvement in this State as elsewhere. There are not enough poults of high quality to supply the demand, consequently those of only mediocre quality still find a ready market and this, in turn, lessens the necessity for the breeder to make improvement in his breeding stock.

But turkey growers are beginning to realize that the cost of production is materially influenced by the quality of poult used to start the enterprise. Hence growers are showing a willingness to pay a premium for better poults. This tendency is stimulating an increased interest in breed improvement. New York State may again lead the country in the quality of its breeding stock.

Table 1. Number of Turkeys Raised in New York State*

Year	*Number raised*
1930	200,000
1935	280,000
1940	400,000
1945	586,000
1950	808,000
1951	881,000
1952	925,000

*From Bureau of Agricultural Economics, U. S. D. A.

Once the decision to raise turkeys has been made, a number of questions should be carefully considered before the enterprise is started. Careful planning may not only increase the immediate efficiency of the plant but may reduce the number of expensive changes that may otherwise be necessary for future expansion. The best planned enterprise is the one most likely to result in the greatest success.

Variety

In choosing a variety, one may consider somewhat his personal preference; but, since consumer preference is more important, he should choose the variety that most economically and best supplies the

demands of the grower's market. The availability of sources of supply is also a consideration.

Some varieties are not fundamentally hardier, more domestic, and better adapted to modern methods of rearing than are others. Nor are high egg production, high fertility, and high hatchability exclusive characteristics of any particular variety. These characteristics can be developed in any variety and have been developed in some of the strains of most varieties. Therefore, these are strain differences rather than varietal differences. In other words, the differences between the strains within a variety are usually more marked than are the differences between the varieties themselves. For examples, when mature, some strains of both bronze and white turkeys average only 3½ to 5 inches across the breast while others average from 5 to 9 inches or more. Some strains have the inherent ability to make more rapid and economical gains than others. Even size has become a strain difference, for there are small bronze and large bronze; small whites and large whites. Many more examples could be given. Therefore care in choosing the strains within the varieties is more important than the care in choosing the variety.

A good strain should be capable of producing 5-pound broilers at about eight weeks of age. These young birds should be 3 inches across the breast at about nine weeks of age and should carry thick fleshing throughout the growing period so they may be marketed at any time after eight weeks of age. When mature, the hens should be small enough to be acceptable to the family trade and the toms large enough to fit the needs of hotel and restaurant trade. The Broad Breasted Bronze, the large white varieties, and others do this, although the bronze does have the disadvantage of dark and unsightly pinfeathers until finished and even then there are some blue backs which are objectionable. Some producers prefer varieties that are smaller than either the large bronze or the large whites, but, regardless of size, a good blocky meat-type bird is the best for market. Productive ability is also important for those turkey growers who are interested in producing eggs and poults for sale as well as for their own replacements.

To Start with Poults, Adult Breeders, or Eggs

USUALLY it is best to start the enterprise with day-old poults. When arranged for early in the season, these may be purchased in any quantity to be delivered at almost any date. Day-old poults can be sent by mail postpaid, express, air freight, or delivered by automobile or truck. They do not stand long-distance shipping so well as do day-old chicks. Going without food and water, as is necessary in delayed shipment, may cause the birds to

lose the desire to eat, and result in serious losses.

There are a few disadvantages in starting with hatching eggs except when there are enough eggs to justify operating one's own incubator or when reliable custom hatching is convenient. It is also impossible to know in advance the percentage of fertility and hatchability of the eggs, hence the exact number of poults obtainable at any one time is always more or less uncertain.

Quality Stock

Regardless of whether eggs or day-old poults are used to start the enterprise, they should be obtained from sources that have been carefully selected for good meat type and that do not have pullorum disease.

The mere fact that poults are bought from nearby sources within the State is no assurance of their quality. Buying nearby merely enables the prospective buyer to learn which sources are good and which are bad. Unless he takes the trouble to determine the quality of the poults before he buys them, he can make as serious a mistake in New York as elsewhere. Every breeder or hatcheryman claims to have well-bred stock and most of them believe that they do have. Hence, one cannot determine the quality of poults offered for sale by reading the advertisements.

When buying from a breeder or hatchery that sells poults only from eggs produced on his own farm, the purchaser can determine something as to what quality to expect by observing the breeding birds from which his poults are to come. An even better way to judge is to see the entire market flock produced on this farm. When buying from a hatchery, one should know where the hatcheryman gets his eggs and then take the opportunity to determine the quality of the flock or flocks from which the eggs come. It is worth repeating that one can tell more by evaluating the quality of the market birds than the quality of the breeders. It is easy to pick a limited number of good-appearing breeding birds from a flock of turkeys, but the average quality of the birds more nearly approximates the average quality of the unselected flock from which these breeders were picked. Inherent uniformity is one of the most important points to look for and one of the points too often neglected.

Another important way to evaluate the source from which to select poults is to talk with those who have bought poults from the breeder or the hatcheryman in question. If the breeder or hatcheryman has a reputation for uniformly good-quality poults, then he is probably a safe source to buy from; but if he has a reputation for selling some good and some bad poults, one takes too much risk in buying from this source.

How Many Poults to Start

FROM 125 to 150 poults is an economical unit to start in one 10- by 12-foot or 12- by 12-foot brooder house or compartment, under one brooder, and with one set of brooder equipment. It is doubtful whether a unit of less than 100 poults can be economically grown under ordinary conditions. The number of units that should make up the enterprise depends upon the amount of brooder space and equipment available or that can be economically made available, the operating capital for feed and other costs, and the previous experience of the operator. An inexperienced turkey raiser should seldom start more than 500 poults the first year; there are of course exceptions to this general rule.

Brooding and Rearing Systems

THE two commonly used systems of brooding and rearing in New York State are the confinement and the semi-confinement systems, and each has advantages and disadvantages. Therefore, the system adopted should be the one that best fits the particular conditions under which turkeys are to be grown.

Complete Confinement

In the complete-confinement system, the birds are kept in the brooder house and sunporch throughout the entire growing period though they are usually moved from the regular brooder quarters to a larger sunporch after the eighth or tenth week and confined to this during the growing period. This system is usually preferred when clean, green

Figure 1. An efficient arrangement for confinement rearing, showing a long-type brooder house with small sunporch at right in background. The rearing sunporch is shown in left foreground.

pastures are not available, when fewer than from 500 to 1000 birds are to be grown, and when turkeys and chickens are grown on the same or nearby premises. It is also best for those persons who have only a limited amount of time to spend in caring for the birds. Even large specialized turkey growers often prefer the complete-confinement method of rearing. Many flocks of from 5000 to 10,000 birds are grown each year by this method. The complete-confinement system is essential for the economic success of a backyard turkey enterprise.

Pole barn

During the past few years a new system of confinement rearing, called the *pole-barn system*, has been developed and has gained considerable popularity during the limited period it has been in use. The pole barn is a simple and economical structure built by setting posts or poles into the ground to support a roof. It usually is enclosed with wire. The floor may be dirt, sand, or cinders. The birds are confined in the pole barn from the time they leave the brooder houses at eight to ten weeks of age until they are ready for market.

Some of the advantages of this newer system over the sunporch system is that it costs less to build per unit of floor area, requires less labor to care for the birds, and the litter stays dry, which eliminates the odor of the droppings and the flies usually encountered around sunporches. Another advantage is that heavy birds can be reared in the pole barn without developing sore feet and often resultant breast blisters. When chopped green forage can be supplied, this system has practically all the advantages of free green range with the added advantages of hav-

Figure 2. This pole-barn type of rearing quarters may also be used for breeder quarters.

ing the birds confined and thereby protected at night. This ordinarily eliminates the necessity of a night watchman. It also permits the use of the land for crops, and reduces if not entirely eliminates the danger from spreading the manure over the land.

Semi-confinement

In the semi-confinement system, day-old poults are started in a brooder house or brooder compartment usually with a sunporch attached. They are never permitted to touch the ground until they are old enough to go onto pasture range. Poults started early in the spring, or in cold climates, may need to be confined until ten weeks of age or older. Those started in warm climates, or after April 15, should usually be able to go on the range at from six to eight weeks of age. This system is usually preferred when clean pastures are available and when enough turkeys are grown to justify the extra work of feeding and watering them on the range. Pasture-range birds may need to be

Figure 3. This newer model of contact-heat battery brooder has four tiers, more space for droppings, and provisions for automatic flowing water.

protected from animals, birds of prey, and thieves. Most turkey growers hire night watchmen who sleep near the range roosts. This, of course, is an additional expense. On the other hand, a few hundred birds stolen at or near marketing age would be a serious loss.

Birds reared in confinement are not more tender, more juicy, or better flavored than are birds reared under the semi-confinement method. When good, clean pastures are available at relatively low costs, the semi-confinement system of raising turkeys is usually preferable for the large commercial grower.

The young poults are sometimes started and grown in battery brooders during the first ten days or two weeks of their lives and then placed in the brooder house or compartment and given access to the attached sunporch until they go on range.

Range Rearing

Range rearing is advisable only when an adequate supply of tender green forage can be supplied at all times and under reasonable sanitary conditions.

The green forage may be supplied by any one of several different seedings. Ladino clover seeded alone or in a mixture with blue grass, timothy, orchard grass, or rye grass is perhaps the most generally used seeding. It is unexcelled for quantity and quality of forage when correctly managed; but if grazed too closely it will be killed and if not close enough it tends to mat down and smother out. The turkeys should be moved often enough so the forage is still green even around the feeders and fountains. To accomplish this, the feeders and fountains should be placed at least 20 feet apart on the range and moved each day. Moving the feeders and fountains only 30 to 40 feet at a time is usually far enough, depending upon the condition of the forage and the concentration of the droppings. The objective is to supply an ever-ready source of fresh clean forage, to increase the amount consumed and thereby lower the feed cost of production, and to decrease the amount of contamination eaten by the birds.

In most range diseases the causative organisms has been taken into the birds' bodies with their feed and water. Hence most disease outbreaks may be prevented by supplying clean feed and clean water in clean feeders and fountains moved frequently enough to keep them on clean ground.

The old definition, "A clean range is a range where no chickens or turkeys have ranged or where no turkey or poultry manure has been spread for at least two years," is a fallacy. Some of the worst blackhead outbreaks are on such ranges. On the other hand, the same range when correctly managed may be used year after year with a minimum of loss from diseases.

Figure 4. A section of a Ladino clover turkey pasture two and one-half months after seeding.

Moving the feeders and fountains daily tends to control diseases even on ranges that have been in use for years. Leaving the feeder and fountains too long in one place results in a heavy concentration of droppings around the feeders and fountains and on the forage leaves eaten by the birds, with the resultant disease outbreaks even on range used for the first time. The important consideration from the standpoints of both nutrition and health of the birds is how well rather than how long the range has been used for turkeys.

Another essential for successful range rearing is enough feeder and fountain space. Turkeys do not like the hot sun and, since there are seldom adequate shades near the feeders, they seek protection from the sun elsewhere. They leave the shade for the feeders and fountains only when hungry or thirsty and they always go more or less as a group, with the stronger birds leading the way. These more aggressive birds crowd around the feeders and the less aggressive ones are pushed out. Once the leaders have satisfied their hunger and thirst they saunter around for a brief time, depending upon the intensity of the heat, flop their wings a few times, and then hurry back to the shade. Once the leaders start for the shade the entire group goes even those that have not had a chance to finish feeding and drinking. Consequently unless

Figure 5. Turkeys moving from the shady corn to the feeders and ladino pasture in the cool of the afternoon.

shades are provided near the feeders and fountains, at least 1 foot of feeder space is needed for each 4 or 5 birds. This is twice the amount necessary when the birds are confined near the feeders.

Quarters and Equipment

The requirements for brooding turkeys are similar to those for chickens. Brooder houses and brooder equipment that are adequate for 250 day-old chicks are usually satisfactory for 150 day-old poults.

Brooder House

A 10- by 12-foot or preferably a 12- by 12-foot brooder house or brooder pen with a 12- by 20-foot sunporch attached is enough room for from 125 to 150 poults up to eight to ten weeks of age. The amount of floor area in the brooder house up to the time the poults are from eight to ten weeks of age is the same regardless of whether they are reared in semi-confinement or in complete confinement, as the poults spend most of the time on the sunporch and little time in the house after the eighth or tenth week. They will even roost on the porch at night unless the house is so constructed and the windows so arranged that they can be thrown wide open during the hot summer weather. The Cornell chick brooding house is satisfactory for the semi-confinement method of brooding small lots of poults, and with extra windows in the rear and ends is satisfactory also for roosting quarters for birds confined throughout the entire growing season. Under the confinement system of rearing, the sunporch should provide from 5 to 6 square feet of floor space for each bird from the eighth or tenth week to maturity.

Although a small colony-type house is satisfactory for a relatively small number of poults, it is not economical for large numbers. On a unit basis, the cost of both the initial construction and the upkeep is relatively high and the house is uneconomical from the standpoint of labor in caring for the poults.

Most turkey producers with large flocks prefer the permanent long-type brooder house (figure 7). This may be either a single-story or a multiple-story house and is usually from 24 to 40 feet wide. It may be any length, depending upon the number of brooder compartments or pens needed. Usually there is an aisle 4 feet wide through the center, with brooder compartments on each side and with a door opening from each pen into it. In such a house equipped with a central heating system for additional heat when needed, an electric brooder in each pen, and running water, poults are cared for with a small amount of labor.

Some growers use long-type houses that have only one row of brooder pens. This type of house

Figure 6. A permanent type of brooder house with individual coal brooders for each compartment. (Photograph from Fairview Turkey Farm)

may or may not have an aisle along one side; but the aisle is preferable, as doors must otherwise be constructed between each pen. Such a house is inconvenient because the operator must pass through all of the other pens to enter the most remote one.

The present trend in brooder-house construction is toward wider houses with fewer permanent alleyways and brooder compartment partitions. Low 2-foot to 2½-foot temporary partitions may be fitted around each brooder stove (when individual brooder stoves are used)

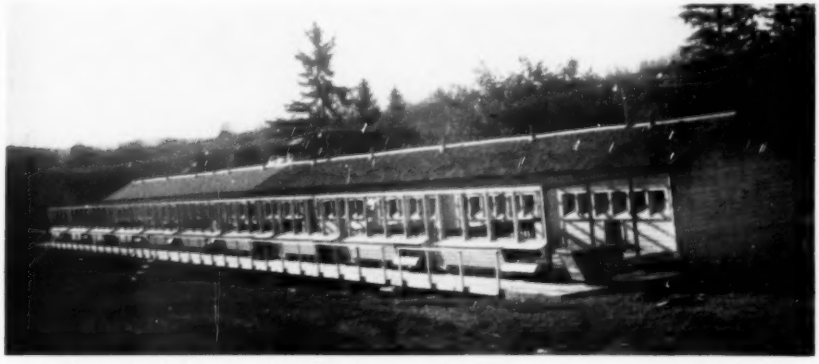

Figure 7. A long-type brooder house with sunporch and catwalk in front.

for the first two weeks. As soon as the poults begin flying over these, they are removed to give the poults free range over the entire floor. This reduces the labor required for feeding and watering. It also permits a freer flow of air for ventilation and makes it possible to heat the building with space heaters.

Regardless of the type of house used, the requirements for good turkey brooding are uncrowded conditions, comfortable temperatures, fresh air without drafts, and sanitary conditions. The floor of the brooder house or pen should be double-boarded or of concrete. The walls may be either single- or double-board, depending upon whether the brooding is to be done in a warm or a cold climate, in late or early spring, and the type of brooder heater used. Single-boarded walls are adequate when coal, wood, gas, or oil-burning brooders are used as a source of heat and when the birds are started from April 15 to June 1. But double walls are advisable for electric brooding in cool climates even during April and May. Double-boarded walls may also be advisable for early brooding in cold climates even when coal, wood, gas, or oil-burning brooders are used.

Ventilation is needed to keep the litter dry and to maintain the health of the poults. But the fresh air from the outside must be controlled to prevent drafts on the poults, especially during the first few weeks of brooding. Even slight drafts passing over a feeder drives poults away from it during the first few days of their lives. Ventilation is usually provided by windows that will raise and lower or that may be moved sidewise. Windows that tilt in at the top are often unsatisfactory because the incoming air is directed toward the ceiling and then reflected to the floor causing drafts on the poults. Ventilators that can be opened or closed at will are sometimes constructed between the rafters at the front of the house as shown in Cornell Extension Bulletin 153, *Rearing Chickens*.[1]

A newer and more positive ventilation system is the fan system and is described in Cornell Bulletin 865, *Permanent Brooder Houses*.[1] Before building a new permanent brooder house or before remodeling an old structure, this bulletin should be carefully studied.

Sunporch

When conditions permit, the sunporch should be on the south or the east side of the brooder quarters to provide maximum sunshine for the poults. A portion of it should be covered to protect the poults from intense sun and from storms. The floor should be high enough above the ground to permit the operator to clean the droppings

[1]This bulletin may be obtained by writing to the Department of Extension Teaching and Information, New York State College of Agriculture, Ithaca, New York.

from under it conveniently. The porch may be built large enough to accommodate the poults until they are mature and ready for market. On the other hand, some producers prefer to use a smaller porch for the poults until the eighth or tenth week and then move them to a larger one for the remainder of the growing period.

One advantage of the large porch is that its use permits the brooder house and the small sunporch to be used to start other flocks during the year. This is economical since the brooder house and the small porch are more expensive per foot of floor area than is a large sunporch. Porches for poults for the first eight or ten weeks only may be floored with 1- by 1-inch slats placed 1 inch apart, or with 1- by 2-inch mesh wire on supporting 2 x 4's. Porches designed to support turkeys until market time should be covered with 1- by 1½-inch slats, placed 1½ inches apart, or with 12-gauge 1- by 4-inch mesh electric-welded wire. Slats are preferable to wire as they are clean and sanitary and less likely to cause sore feet and breast blisters. If slats are expensive, they may be used only on those areas where the feeders and fountains are placed; the wire may be used for the remainder of the floor area. The slats should run parallel with the feeders.

The porches may be enclosed with either slats or wire and covered with light wire netting that is raised high enough above the floor to permit the operator to walk under it without stooping (figure 8). The fountains and feeders are usually placed around the sides and ends of the porches. Floors of the porches built high enough above the

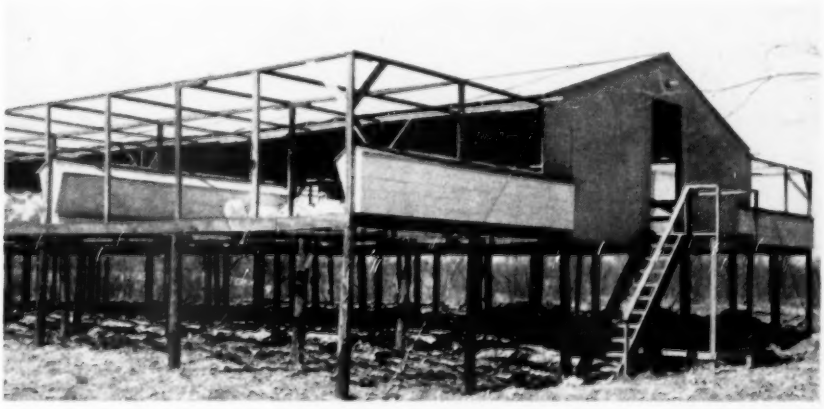

Figure 8. Confinement-rearing shelter. The porch is about 6½ feet above the ground. A tractor and manure spreader can be driven under the floor. The porch cover is about 6½ feet above the floor.

Figure 9. Wire incline from brooder floor to porch floor.

ground for convenient cleaning are usually too high for feeding from the ground. One must either feed from inside the porches, from trucks, or from catwalks constructed on a level with the floors and around the ends and sides of these porches. These catwalks may be of planks or of slats similar to those used inside the porches.

When it is at all practical, running water, automatically con-

Figure 10. A porch with an incline to the house. Poults climb from brooder-floor level to porch-floor level without any trouble. The incline and sunporch floor may be constructed of 1-by-4-inch wire or of wood slats.

trolled, should be supplied on the porches. An automatic water supply materially reduces the labor cost of producing turkeys.

Brooders

For brooding in single colony-type houses or in single brooder compartments, individual brooder units consisting of the hover and heater are used for each 125 or 150 poults. Coal, gas, or oil-burning brooders are usually preferred for brooding under conditions that make it difficult to keep the room temperature at 60° F or above. For brooding under conditions where low room temperatures are not problems, electric or gas burners are usually preferred.

In brooding in the permanent long-type brooder house (figure 7), a central heating system to maintain a room temperature of from 65° to 70° F and individual electric or gas brooders for spot heating the poults are satisfactory. The auxiliary heat may be supplied by hot-water pipes, warm-air ducts, or space heaters. This arrangement provides ideal brooder conditions but it does have the disadvantage of being more or less expensive. Satisfactory brooding is being done with the old hot-water type of brooding where hot-water pipes run the full length of the house. These are covered with homemade hovers. This plan is discussed in Cornell Bulletin 865, *Permanent Brooder Houses.*"

The use of hot-water pipes tends to save labor over the individually heated hovers, because only one fire needs to be started and maintained even though thousands of poults are to be brooded.

Feeders, Fountains, and Guards

Feeders

Feeders of various types are used and, as long as they conform to a few essentials, are satisfactory. They must be large enough and supply enough feeding space to prevent crowding. Five 3-foot or 4-foot wood or metal feeders for each brooder unit are enough. They should have reels or guards to prevent the poults from walking in the feed but open enough to encourage eating, as poults do not like to stick their heads through small openings to eat or drink. They should be large enough to supply a day's ration when filled only two-thirds full. Much of the feed is billed out and wasted by the poults when feeders are too full. Lips from 1½ to 2 inches wide, fastened to the inside edges of the feeders and tilted toward the center, also tend to lessen the amount of feed billed out and wasted after the poults reach four weeks of age.

Fountains

Usually 1-quart fountains are a nuisance in brooder houses because they are inconvenient to fill, upset easily, and take up considerable space. Each brooder unit should have two or three 2-gallon fountains

Figure 11. Fountains and feeders in place. Fountains of 1- or 2-gallon capacity may be used even at the beginning of the brooding period. All feed should be fed in feeders that radiate from the brooder. Note the portions of the poult guards at each corner.

with guards that keep the poults out of the water. Large trough-type waterers with float valves to control the supply are ideal after the poults are eight or ten weeks of age, and on the sunporch or range.

Guards

Poult guards prevent the birds from wandering away from the heat and getting chilled. They are used also to fence off sharp corners in the brooder house or around the feeder to prevent crowding. They may be made of wire netting, of strips of heavy building paper, or roll roofing, or of the regular corrugated cardboard used in chick brooding. They should be from 12 to 18 inches high. The cardboard guards and those of similar material tend to prevent drafts on the poults and to hold the heat around the brooder hover. This may be an advantage when brooding with electricity, but a disadvantage when coal or other types of stoves are used that are likely to overheat. Usually, wire netting is preferred if coal, wood, gas, or oil burners are used, especially during mild or warm weather. The cardboard types are preferred for electric brooding in open and drafty houses, and when the weather is extremely cold.

Choice of Ration

THE cost of the feed required to produce a pound of gain rather than the cost per pound of feed should be the chief consideration in the selection of the ration. This depends upon the initial cost as well as upon the efficiency of the ration. Most growers find it more convenient and economical to buy a ready-mixed ration, especially the mash portion of the ration, than to buy the ingredients and mix them at home or to have them mixed at local mills.

Home-grown grains, milk and green food should be used when available to form a balanced ration; but the use of home-grown feeds without reference to a balance of required nutrients is seldom economical. In some parts of the country where grains are economical and plentiful, high-protein and high-vitamin concentrate mashes used with home-grown or locally purchased grains have given good results.

Getting House and Equipment Ready

IT is important to make preparations for the poults before their arrival. All previously used brooding quarters and equipment should be cleaned and disinfected thoroughly. This job may be simplified and its effectiveness insured by the following procedure.

1. Scrape and sweep the floors and walls and remove all dirt and debris entirely from the house where it will not be carried back on the operator's feet during muddy weather.

2. Scrub the walls, floors, feeders, and fountains with a hot lye solution (one can of concentrated household lye to 30 to 40 gallons of hot water). The lye is used as a cleaning agent and not as a disinfectant. When water pressure is available, flush the house out and let it dry thoroughly before disinfecting.

3. Disinfect the house after it has dried thoroughly so the cracks in the walls and floor are again open. A 5 per cent solution of compound cresol is one of several good disinfectants. Use this solution in such quantities that the floor and walls will remain wet for six or seven hours.

4. Open the doors and windows and permit the house to air out and dry thoroughly. It is necessary to air the house for at least a week or ten days to get rid of the coal-tar fumes that are harmful to poults.

5. After the house has been cleaned, install the equipment, and check all parts of the brooder to see that they are in perfect working order, then place about 2 inches of litter evenly over the entire floor. The litter should never be covered with papers, sacks, or other material. Arrange the feeders around the hover so they radiate from it like spokes from the hub of a wheel. When the room temperature is low (below 60° F to 70° F), extend the

feeders part way under the hover. For the first day or two keep the fountains between the feeders where they are readily accessible to the poults at all times. The guards should encircle the hover at from 1 to 2 feet from its outer edge, depending upon the severity of the weather, the type of brooder used, and whether the guards are wire mesh or solid material. They should also be in place at the corners of the brooder house.

6. Start the brooder heater at least a week before the poults arrive and keep it going until the temperature can be held under complete control.

Care of Poults upon Arrival

THE poults should be carefully examined as soon as they arrive. Dead poults upon arrival indicate that they were either weak when shipped or that they have been unduly exposed enroute. Strong, vigorous, day-old poults are alert and active, with long fluffy down, well-healed navels, and no stickiness on any part of the body. Poults with sticky down and with pieces of shell dried and hanging to them are not of high quality and seldom live well under normal brooding conditions.

The following procedure will reveal any unhealed navels: Take the poult in the left hand, with its back in the palm of the hand and its head toward you and then turn your hand so the poult lies with its feet up. Pass the right forefinger lightly over the abdomen. An imperfectly healed navel has an abnormal enlargement or scab. Blow on the navel to part the down and to better display its condition. Even well-hatched poults will have some enlargement, but these heal and smooth out rapidly and should be relatively smooth by the end of the fourth day.

Brooding Temperatures

THE brooder-hover temperature should usually be from 95° to 100° F during the first week, and should be lowered about 5° each week until a temperature of 75° to 80° F is reached. The general actions of the poults is, however, a better measure of their comfort than the reading of the thermometer.

Day-old poults are less active than day-old chicks and are more inclined to stay under the hover instead of coming out to eat when the brooder house temperature is low.

Feeding and Managing Poults

Teaching Poults to Eat

Teaching healthy poults to eat is not difficult when they are fed promptly upon arrival and when brooding conditions are correct. Early feeding lessens the probability of their eating litter. Some caretakers dip the beak of each poult in water or in milk before the bird is placed under the brooder. Ordinarily this precaution is not necessary but, when time permits, it may be advisable.

The most practical way to teach poults to eat and drink is to have the feed in the feeders, the water in the fountains, the birds under the brooder, and then to go away and leave them alone. They usually learn to eat without trouble when both feeders and fountains are in well-lighted spots.

Most growers feed a turkey starter mash, with a few particles of small scratch grain, rolled oats, or grit scattered over the top to attract their attention. Some feed only scratch grain for the first day, then change to starting mash on the second. The feed and the water should be kept clean at all times.

During Brooding

Feeding and management practices during the first eight or ten weeks are identical in both the complete confinement and the semi-confinement system of rearing and for all strains and varieties of turkeys.

A high-potency starter may be kept before the birds during the first eight or ten weeks, with grain fed in the same way after the sixth or eighth week. Water should, of course, be readily available at all times. Grit is usually fed once or twice a week, but may be kept in separate hoppers before the poults all the time. This system of grit feeding saves time, but occasionally results in some mortality when the poults eat too much of it. Oyster shell to supply extra calcium need not be given until the poults are 10 to 12 weeks old and then only upon the advice of the feed company that manufactures the ration. It may be important not to upset the mineral balance of the ration.

When weather permits, the poults should be encouraged to get out on the sunporch after the first few weeks. Feeders and fountains on the sunporch during warm, sunny days encourages the poults to spend more time outside.

The poults should be observed each day for any abnormal conditions. At the first sign of sickness or of being out of condition, every effort should be made to determine the cause. Serious losses from nutritional and parasitic diseases may usually be prevented when the trouble is detected early and when prompt action is taken.

The infectious disease most common during the brooding period is coccidiosis. The young birds get the disease by eating or drinking relatively large numbers of the causative organism. Hence the necessity for preventing the birds from eating or drinking except from clean feeders and fountains.

In any disease outbreak, one should get an accurate diagnosis by a trained technician and give specific treatment for the disease.

The "swollen hock" disease has caused serious financial losses during recent years. The legs swell at the hocks and are often feverish. The appearance of swelling is sometimes increased by the accumulation of fluid at the hock joint. In severe cases, the legs bow and re-

semble the front legs of a bull dog. Fast-growing heavy varieties, especially if on wire floors, seem to be most likely to show this trouble. While this is without doubt a nutritional-deficiency disease, the specific cause is not definitely known. It, like the other nutritional-deficiency diseases, may also be aggravated and increased by unfavorable brooder conditions. Good brooding conditions and adequate daily feeding of green food may help to prevent the trouble, but advanced cases do not recover when placed on pasture range.

During Rearing

Rearing pastures or quarters

Poults from eight to ten weeks of age should be placed on permanent rearing quarters or on pasture range. They usually need more feed, fountain, and floor space than most brooder quarters supply. By moving them out, the brooder quarters and equipment may be cleaned, disinfected, and made ready for starting other groups of poults.

Confinement rearing

Those poults to be confined to porches should have roosts. These usually are placed under the roof-covered portion of the porch. The floor under the roosts should be of 12-gauge, electrically welded 1- by 4-inch mesh wire. This is the only portion of the floor where wire is preferred to wood slats. Poles from 3 to 4 inches in diameter make ideal roosts. When these are not available, 1 by 4's or 1 by 6's placed on edge and with the corners of the upper edges rounded off are satisfactory. They need to be no more than from 4 to 6 inches above the floor. The disadvantages of the conventional high roost are greater than the advantages. Each poult needs 1 foot of roosting space.

Automatic watering systems save labor and permit the placing of troughs and fountains on the less accessible areas of the porch, thereby leaving the more accessible areas for the feeders. The float valves and other controls, however, should be placed for the operator's convenience and where the poults cannot reach them. Provision must also be made for cleaning the water troughs or fountains.

The feeders should be large enough for at least one day's feed supply when filled two-thirds full. Some growers prefer feeders that are large enough for a week's supply. Then, the feed is unloaded from the truck into the feed hoppers, thereby eliminating the feeding chore. But, regardless of which size is preferred, the feeders should be placed where they can be filled conveniently. They should be high enough for the poults to eat from without stooping, as standing in a squatting position to eat is believed to increase the severity of the "swollen hock" trouble. There should be enough space above the feed so the poults can raise their heads.

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